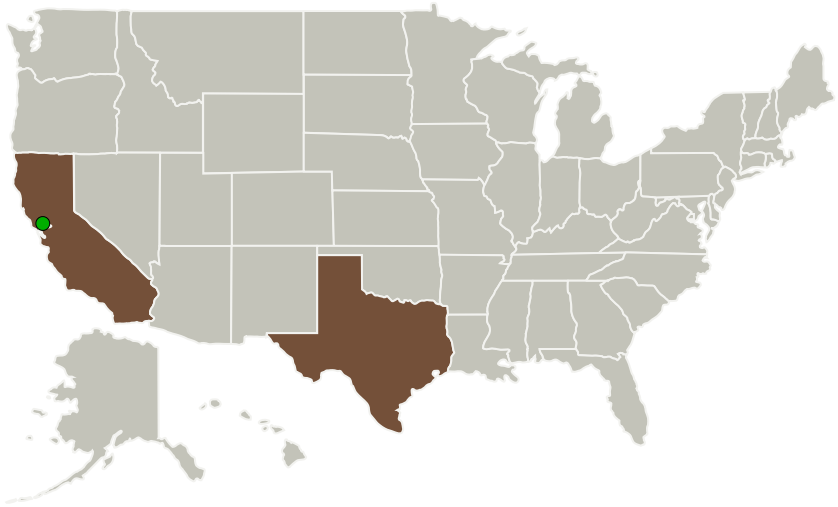
Integration of Notification with 3D Visualization of Rover Operations, Phase I

Completed Technology Project (2010 - 2011)

Project Introduction

3D visualization has proven effective at orienting remote ground controllers about robots operating on a planetary surface. Using such displays, controllers can watch a robot move through surface terrain maps and react to objects in that terrain. Readings taken in the robot's surroundings can be overlaid on terrain maps to improve human understanding. 3D visualization, however, focuses a controller's attention on what is happening in the vicinity of the robot. The effectiveness of visualization at centering attention on the robot means that information not spatially linked to that view could be missed. TRACLabs, Carnegie Mellon University, and Stinger Ghaffarian Technologies propose to develop software for notifying users of 3D visualization about important new information that may not be spatially linked to the current view. We will identify use cases where notification is needed when using 3D visualization and design software for constructing and presenting notices for these use cases. We will evaluate this design for use in K10 rover operations by defining an approach for integrating notification with the Visual Environment for Remote Virtual Exploration (VERVE). The extensive experience of this team in developing advanced software for robotic surface operations will contribute to the timely delivery of the proposed technology.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
TRACLabs, Inc.	Lead Organization	Industry	Webster, Texas
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
Carnegie Mellon University	Supporting Organization	Academia	Pittsburgh, Pennsylvania
Carnegie Mellon University - Silicon Valley	Supporting Organization	Academia	Moffett Field, California

Primary U.S. Work Locations	
California	Texas

Project Transitions

January 2010: Project Start

January 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140128)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

TRACLabs, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

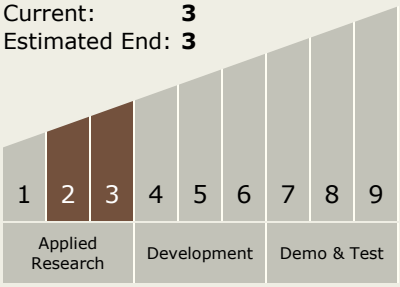
Carlos Torrez

Principal Investigator:

Debra L Schreckenghost

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.1 Sensing and Perception
    - TX04.1.3 Onboard Mapping and Data Analysis

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System